

## WHAT IS CLAIMED IS:

1. A heat conductive polishing pad for chemical-mechanical polishing comprising:

a polishing body including a thermoconductive polymer having a substrate with filler particles contained therein wherein said filler particles contain a Group II salt.

2. The heat conductive polishing pad as recited in Claim 1 wherein said polishing body further includes a base pad and said thermoconductive polymer forms a polishing surface located over said base pad and said thermoconductive polymer has a thermal conductivity of greater than about  $1 \text{ Watts m}^{-1} \text{ K}^{-1}$  and an electrical volume resistivity of greater than about  $1 \times 10^{15} \text{ ohm cm}^{-1}$  at  $25^\circ\text{C}$ .

3. The heat conductive polishing pad as recited in Claim 1 wherein said substrate is selected from the group consisting of: polyurethane; polyolefin; and polyvinyl esters.

4. The heat conductive polishing pad as recited in Claim 1 wherein said substrate is selected from the group consisting of: polyurea;

4 polycarbonate;  
5 aliphatic polyketone;  
6 polysulfone;  
7 aromatic polyketone;  
8 6,6 nylon;  
9 6,12 nylon; and  
10 polyamide.

5. The heat conductive polishing pad as recited in Claim 1  
2 wherein said substrate is selected from the group consisting of:  
3 thermoplastic rubber; and  
4 melt-processible rubber.

6. The heat conductive polishing pad as recited in Claim 1  
2 wherein said substrate is selected from the group consisting of:  
3 polypropylene;  
4 polyethylene;  
5 crosslinked polyethylene;  
6 ethylene vinyl acetate; and  
7 polyvinylacetate.

7. The heat conductive polishing pad as recited in Claim 1  
2 wherein said thermoconductive polymer has a grafted compound  
3 located substantially throughout said polymer.

8. The heat conductive polishing pad as recited in Claim 1  
2 wherein said thermoconductive polymer has a modified surface and a  
3 grafted surface on said modified surface, said grafted surface  
4 comprising a grafted compound.

9. The heat conductive polishing pad as recited in Claim 7  
2 wherein said grafted compound includes an inorganic metal oxide.

10. The heat conductive polishing pad as recited in Claim 8  
2 wherein said grafted compound includes an inorganic metal oxide.

11. The heat conductive polishing pad as recited in Claim 7  
2 wherein said thermoconductive polymer has a foam structure and said  
3 grafted compound includes a controlled watability compound.

12. The heat conductive polishing pad as recited in Claim 8  
2 wherein said thermoconductive polymer has a foam structure and said  
3 grafted compound includes a controlled watability compound.

13. The heat conductive polishing pad as recited in Claim 7  
2 wherein said grafted compound includes an organic compound.

14. The heat conductive polishing pad as recited in Claim 8  
2 wherein said grafted compound includes an organic compound.

15. The heat conductive polishing pad as recited in Claim 1  
wherein said Group II salt includes an anion selected from the  
group consisting of:

Sulfate;

Stearate; and

Carbonate.

16. The heat conductive polishing pad as recited in Claim 1  
wherein said Group II salt includes an anion comprised of oxide.

17. The heat conductive polishing pad as recited in Claim 1  
wherein said Group II salt is Magnesium Oxide.

18. The heat conductive polishing pad as recited in Claim 1  
wherein said Group II salt includes an anion comprised of  
hydroxide.

19. The heat conductive polishing pad as recited in Claim 1  
wherein said filler particles comprise at least about 20% by weight  
of said thermoconductive polymer.

20. The heat conductive polishing pad as recited in Claim 1  
wherein said filler particles have a spherical shape having an  
average diameter of less than about 50  $\mu\text{m}$  to about 1  $\mu\text{m}$ .

21. The heat conductive polishing pad as recited in Claim 1  
2 wherein said filler particles are incorporated substantially  
3 throughout said substrate.

22. A method for preparing a heat conductive polishing pad  
2 for chemical-mechanical polishing comprising:

3 providing a substrate;

4 blending filler particles containing a Group II salt into said  
5 substrate to thereby produce a thermoconductive polymer; and

6 forming a polishing body from said thermoconductive polymer  
7 suitable for polishing a semiconductor wafer or integrated circuit.

23. The method as recited in Claim 22 further including  
2 extruding said thermoconductive polymer from an extrusion apparatus  
3 to provide a thermoconductive foam for forming said polishing body.

24. The method as recited in Claim 22 wherein forming said  
2 polishing body further comprises coupling a base pad under said  
3 thermoconductive polymer and said thermoconductive polymer has a  
4 thermal conductivity of greater than about  $1 \text{ Watts m}^{-1} \text{ K}^{-1}$  and an  
5 electrical volume resistivity of greater than about  $1 \times 10^{15} \text{ ohm cm}^{-1}$   
6 at  $25^{\circ}\text{C}$ .

25. The method as recited in Claim 22 further comprising  
2 exposing said polishing body to an initial plasma reactant to  
3 produce a modified surface thereon; and

4 exposing said modified surface to a secondary plasma reactant  
5 to create a grafted surface on said modified surface.

26. The method as recited in Claim 22 further comprising  
2 exposing said polishing body to a precursor dissolved in a  
3 supercritical fluid to thereby produce a modified polishing body.

27. The method as recited in Claim 22 wherein said blending  
2 further comprises exposing said substrate to said filler particle  
3 dissolved in a supercritical fluid to thereby produce said  
4 thermoconductive polymer.

28. The method as recited in Claim 27 wherein said  
2 supercritical fluid includes an initiator that includes sufficient  
3 water such that said Group II salt includes an anion substantially  
4 comprised of hydroxide.

29. A polishing apparatus comprising:

2 a mechanically driven carrier head;

3 a polishing platen, said carrier head being positionable  
4 against said polishing platen to impart a polishing force against  
5 said polishing platen; and

6 a polishing pad attached to said polishing platen and  
7 including a polishing body comprising a thermoconductive polymer  
8 having a substrate with filler particles contained therein wherein  
9 said filler particles contain a Group II salt.

30. The polishing apparatus as recited in Claim 29 wherein  
2 said Group II salt includes an anion comprised of hydroxide capable  
3 of decomposing to oxide and water during chemical-mechanical  
4 polishing.